

## Part III: The Production of Absolute Surplus-Value

### CHAPTER ELEVEN

# Rate and Mass of Surplus Value

In this chapter, as hitherto, the value of labour-power, and therefore the part of the working day necessary for the reproduction or maintenance of that labour-power, are supposed to be given, constant magnitudes.

This premised, with the rate, the mass is at the same time given of the surplus value that the individual labourer furnishes to the capitalist in a definite period of time. If, *e.g.*, the necessary labour amounts to 6 hours daily, expressed in a quantum of gold = 3 shillings, then 3s is the daily value of one labour-power or the value of the capital advanced in the buying of one labour-power. If, further, the rate of surplus value be = 100%, this variable capital of 3s produces a mass of surplus value of 3s, or the labourer supplies daily a mass of surplus labour equal to 6 hours.

But the variable capital of a capitalist is the expression in money of the total value of all the labour-powers that he employs simultaneously. Its value is, therefore, equal to the average value of one labour-power, multiplied by the number of labour-powers employed. With a given value of labour-power, therefore, the magnitude of the variable capital varies directly as the number of labourers employed simultaneously. If the daily value of one labour-power = 3s, then a capital of 300s must be advanced in order to exploit daily 100 labour-powers, of  $n$  times 3s, in order to exploit daily  $n$  labour-powers.

In the same way, if a variable capital of 3s, being the daily value of one labour-power, produce a daily surplus value of 3s, a variable capital of 300s will produce a daily surplus value of 300s, and one of  $n$  times 3s a daily surplus value of  $n \times 3s$ . The mass of the surplus value produced is therefore equal to the surplus value which the working day of one labourer supplies multiplied by the number of labourers employed. But as further the mass of surplus value which a single labourer produces, the value of labour-power being given, is determined by the rate of the surplus value, this law follows: the mass of the surplus value produced is equal to

the amount of the variable capital advanced, multiplied by the rate of surplus value, in other words: it is determined by the compound ratio between the number of labour-powers exploited simultaneously by the same capitalist and the degree of exploitation of each individual labour-power.

Let the mass of the surplus value be S, the surplus value supplied by the individual labourer in the average day s the variable capital daily advanced in the purchase of one individual labour-power v, the sum total of the variable capital V, the value of an average labour-power P, its degree of exploitation

a' (surplus-labour) ————— a (necessary-labour)  
and the number of labourers employed n; we have:

$$S = \frac{s}{v} \times V = \frac{a'}{P \times \frac{a}{n}}$$

It is always supposed, not only that the value of an average labour-power is constant, but that the labourers employed by a capitalist are reduced to average labourers. There are exceptional cases in which the surplus value produced does not increase in proportion to the number of labourers exploited, but then the value of the labour-power does not remain constant.

In the production of a definite mass of surplus value, therefore the decrease of one factor may be compensated by the increase of the other. If the variable capital diminishes, and at the same time the rate of surplus value increases in the same ratio, the mass of surplus value produced remains unaltered. If on our earlier assumption the capitalist must advance 300s, in order to exploit 100 labourers a day, and if the rate of surplus value amounts to 50%, this variable capital of 300s yields a surplus value of 150s or of 100 x 3 working hours. If the rate of surplus value doubles, or the working day, instead of being extended from 6 to 9, is extended from 6 to 12 hours and at the same time variable capital is lessened by half, and reduced to 150s, it yields also a surplus-value of 150s or 50 x 6 working hours. Diminution of the variable capital may therefore be compensated by a proportionate rise in the degree of exploitation of labour-power, or the decrease in the number of the labourers employed by a proportionate extension of the working day. Within certain limits therefore the supply of labour exploitable by capital is independent of the supply of labourers. [1] On the contrary, a fall in the rate of

surplus value leaves unaltered the mass of the surplus-value produced, if the amount of the variable capital, or number of the labourers employed, increases in the same proportion.

Nevertheless, the compensation of a decrease in the number of labourers employed, or of the amount of variable capital advanced by a rise in the rate of surplus value or by the lengthening of the working-day, has impassable limits. Whatever the value of labour-power may be, whether the working time necessary for the maintenance of the labourer is 2 or 10 hours, the total value that a labourer can produce, day in, day out, is always less than the value in which 24 hours of labour are embodied, less than 12s, if 12s is the money expression for 24 hours of realised labour. In our former assumption, according to which 6 working hours are daily necessary in order to reproduce the labour-power itself or to replace the value of the capital advanced in its purchase, a variable capital of 1,500s, that employs 500 labourers at a rate of surplus value of 100% with a 12 hours' working day, produces daily a surplus value of 1,500s or of 6 x 500 working hours. A capital of 300s that employs 100 labourers a day with a rate of surplus value of 200% or with a working day of 18 hours, produces only a mass of surplus value of 600s or 12 x 100 working hours; and its total value-product, the equivalent of the variable capital advanced plus the surplus-value, can, day in, day out, never reach the sum of 1,200s or 24 x 100 working hours. The absolute limit of the average working day — this being by nature always less than 24 hours — sets an absolute limit to the compensation of a reduction of variable capital by a higher rate of surplus value, or of the decrease of the number of labourers exploited by a higher degree of exploitation of labour-power. This palpable law is of importance for the clearing up of many phenomena, arising from a tendency (to be worked out later on) of capital to reduce as much as possible the number of labourers employed by it, or its variable constituent transformed into labour-power, in contradiction to its other tendency to produce the greatest possible mass of surplus value. On the other hand, if the mass of labour-power employed, or the amount of variable capital, increases, but not in proportion to the fall in the rate of surplus value, the mass of the surplus value produced, falls.

A third law results from the determination, of the mass of the surplus-value produced, by the two factors: rate of surplus value and amount of variable capital advanced. The rate of surplus value, or the degree of exploitation of labour-power, and the value of labour-power, or the amount of necessary working time being given, it is self-evident that the greater the variable capital, the greater would be the mass of the value produced and of the surplus value. If the limit of the working-day is given, and also the limit of its necessary constituent, the mass of value and surplus value that an individual capitalist produces, is clearly exclusively dependent on the mass of labour that he sets in motion. But this, under the conditions

supposed above, depends on the mass of labour-power, or the number of labourers whom he exploits, and this number in its turn is determined by the amount of the variable capital advanced. With a given rate of surplus value, and a given value of labour-power, therefore, the masses of surplus value produced vary directly as the amounts of the variable capitals advanced. Now we know that the capitalist divides his capital into two parts. One part he lays out in means of production. This is the constant part of his capital. The other part he lays out in living labour-power. This part forms his variable capital. On the basis of the same mode of social production, the division of capital into constant and variable differs in different branches of production, and within the same branch of production, too, this relation changes with changes in the technical conditions and in the social combinations of the processes of production. But in whatever proportion a given capital breaks up into a constant and a variable part, whether the latter is to the former as 1:2 or 1:10 or 1:x, the law just laid down is not affected by this. For, according to our previous analysis, the value of the constant capital reappears in the value of the product, but does not enter into the newly produced value, the newly created value product. To employ 1,000 spinners, more raw material, spindles, &c., are, of course, required, than to employ 100. The value of these additional means of production however may rise, fall, remain unaltered, be large or small; it has no influence on the process of creation of surplus value by means of the labour-powers that put them in motion. The law demonstrated above now, therefore, takes this form: the masses of value and of surplus value produced by different capitals — the value of labour-power being given and its degree of exploitation being equal — vary directly as the amounts of the variable constituents of these capitals, *i.e.*, as their constituents transformed into living labour-power.

This law clearly contradicts all experience based on appearance. Everyone knows that a cotton spinner, who, reckoning the percentage on the whole of his applied capital, employs much constant and little variable capital, does not, on account of this, pocket less profit or surplus value than a baker, who relatively sets in motion much variable and little constant capital. For the solution of this apparent contradiction, many intermediate terms are as yet wanted, as from the standpoint of elementary algebra many intermediate terms are wanted to understand that 0/0 may represent an actual magnitude. Classical economy, although not formulating the law, holds instinctively to it, because it is a necessary consequence of the general law of value. It tries to rescue the law from collision with contradictory phenomena by a violent abstraction. It will be seen later [2] how the school of Ricardo has come to grief over this stumbling block. Vulgar economy which, indeed, "has really learnt nothing," here as everywhere sticks to appearances in opposition to the law which regulates and explains them. In opposition to Spinoza, it believes that "ignorance is a sufficient reason."

The labour which is set in motion by the total capital of a society, day in, day out, may be regarded as a single collective working day. If, *e.g.*, the number of labourers is a million, and the average working-day of a labourer is 10 hours, the social working day consists of ten million hours. With a given length of this working day, whether its limits are fixed physically or socially, the mass of surplus value can only be increased by increasing the number of labourers, *i.e.*, of the labouring population. The growth of population here forms the mathematical limit to the production of surplus value by the total social capital. On the contrary, with a given amount of population, this limit is formed by the possible lengthening of the working day. [3] It will, however, be seen in the following chapter that this law only holds for the form of surplus value dealt with up to the present.

From the treatment of the production of surplus value, so far, it follows that not every sum of money, or of value, is at pleasure transformable into capital. To effect this transformation, in fact, a certain minimum of money or of exchange value must be presupposed in the hands of the individual possessor of money or commodities. The minimum of variable capital is the cost price of a single labour-power, employed the whole year through, day in, day out, for the production of surplus value. If this labourer were in possession of his own means of production, and were satisfied to live as a labourer, he need not work beyond the time necessary for the reproduction of his means of subsistence, say 8 hours a day. He would, besides, only require the means of production sufficient for 8 working hours. The capitalist, on the other hand, who makes him do, besides these 8 hours, say 4 hours' surplus-labour, requires an additional sum of money for furnishing the additional means of production. On our supposition, however, he would have to employ two labourers in order to live, on the surplus value appropriated daily, as well as, and no better than a labourer, *i.e.*, to be able to satisfy his necessary wants. In this case the mere maintenance of life would be the end of his production, not the increase of wealth; but this latter is implied in capitalist production. That he may live only twice as well as an ordinary labourer, and besides turn half of the surplus value produced into capital, he would have to raise, with the number of labourers, the minimum of the capital advanced 8 times. Of course he can, like his labourer, take to work himself, participate directly in the process of production, but he is then only a hybrid between capitalist and labourer, a "small master." A certain stage of capitalist production necessitates that the capitalist be able to devote the whole of the time during which he functions as a capitalist, *i.e.*, as personified capital, to the appropriation and therefore control of the labour of others, and to the selling of the products of this labour. [4] The guilds of the middle ages therefore tried to prevent by force the transformation of the master of a trade into a capitalist, by limiting the number of labourers that could be employed by one master within a very small maximum. The possessor of money or commodities actually turns into a capitalist in such cases only where the minimum sum advanced for production greatly exceeds

the maximum of the middle ages. Here, as in natural science, is shown the correctness of the law discovered by Hegel (in his "Logic") that merely quantitative differences beyond a certain point pass into qualitative changes. [5]

The minimum of the sum of value that the individual possessor of money or commodities must command, in order to metamorphose himself into a capitalist, changes with the different stages of development of capitalist production, and is at given stages different in different spheres of production, according to their special and technical conditions. Certain spheres of production demand, even at the very outset of capitalist production, a minimum of capital that is not as yet found in the hands of single individuals. This gives rise partly to state subsidies to private persons, as in France in the time of Clobber, and as in many German states up to our own epoch, partly to the formation of societies with legal monopoly for the exploitation of certain branches of industry and commerce, the forerunners of our modern joint stock companies. [6]

Within the process of production, as we have seen, capital acquired the command over labour, *i.e.*, over functioning labour-power or the labourer himself. Personified capital, the capitalist takes care that the labourer does his work regularly and with the proper degree of intensity.

Capital further developed into a coercive relation, which compels the working-class to do more work than the narrow round of its own life wants prescribes. As a producer of the activity of others, as a pumper-out of surplus labour and exploiter of labour-power, it surpasses in energy, disregard of bounds, recklessness and efficiency, all earlier systems of production based on directly compulsory labour.

At first, capital subordinates labour on the basis of the technical conditions in which it historically finds it. It does not, therefore, change immediately the mode of production. The production of surplus value — in the form hitherto considered by us — by means of simple extension of the working day, proved, therefore, to be independent of any change in the mode of production itself. It was not less active in the old-fashioned bakeries than in the modern cotton factories.

If we consider the process of production from the point of view of the simple labour process, the labourer stands in relation to the means of production, not in their quality as capital, but as the mere means and material of his own intelligent productive activity. In tanning, *e.g.*, he deals with the skins as his simple object of labour. It is not the capitalist whose skin he tans. But it is different as soon as we deal with the process of production from the point of view of the process of creation of surplus value. The means of production are at once changed into means for the absorption of the labour of others. It is now no longer the labourer that

employs the means of production, but the means of production that employ the labourer. Instead of being consumed by him as material elements of his productive activity, they consume him as the ferment necessary to their own life process, and the life process of capital consists only in its movement as value constantly expanding, constantly multiplying itself. Furnaces and workshops that stand idle by night, and absorb no living labour, are "a mere loss" to the capitalist. Hence, furnaces and workshops constitute lawful claims upon the night labour of the work-people. The simple transformation of money into the material factors of the process of production, into means of production, transforms the latter into a title and a right to the labour and surplus labour of others. An example will show, in conclusion, how this sophistication, peculiar to and characteristic of capitalist production, this complete inversion of the relation between dead and living labour, between value and the force that creates value, mirrors itself in the consciousness of capitalists. During the revolt of the English factory lords between 1848 and 1850, "the head of one of the oldest and most respectable houses in the West of Scotland, Messrs. Carlile Sons & Co., of the linen and cotton thread factory at Paisley, a company which has now existed for about a century, which was in operation in 1752, and four generations of the same family have conducted it" ... this "very intelligent gentleman" then wrote a letter [7] in the *Glasgow Daily Mail* of April 25th, 1849, with the title, "The relay system," in which among other things the following grotesquely naïve passage occurs: "Let us now ... see what evils will attend the limiting to 10 hours the working of the factory.... They amount to the most serious damage to the mill owner's prospects and property. If he (i.e., his "hands") worked 12 hours before, and is limited to 10, then every 12 machines or spindles in his establishment shrink to 10, and should the works be disposed of, they will be valued only as 10, so that a sixth part would thus be deducted from the value of every factory in the country." [8]

To this West of Scotland bourgeois brain, inheriting the accumulated capitalistic qualities of "four generations," the value of the means of production, spindles, &c., is so inseparably mixed up with their property, as capital, to expand their own value, and to swallow up daily a definite quantity of the unpaid labour of others, that the head of the firm of Carlile & Co. actually imagines that if he sells his factory, not only will the value of the spindles be paid to him, but, in addition, their power of annexing surplus value, not only the labour which is embodied in them, and is necessary to the production of spindles of this kind, but also the surplus labour which they help to pump out daily from the brave Scots of Paisley, and for that very reason he thinks that with the shortening of the working day by 2 hours, the selling price of 12 spinning machines dwindles to that of 10!

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## Footnotes

[1] This elementary law appears to be unknown to the vulgar economists, who, upside-down Archimedes, in the determination of the market-price of labour by supply and demand, imagine they have found the fulcrum by means of which, not to move the world, but to stop its motion.

[2] Further particulars will be given in Book IV.

[3] "The Labour, that is the economic time, of society, is a given portion, say ten hours a day of a million of people, or ten million hours.... Capital has its boundary of increase. This boundary may, at any given period, be attained in the actual extent of economic time employed." ("An Essay on the Political Economy of Nations." London, 1821, pp. 47, 49.)

[4] "The farmer cannot rely on his own labour, and if he does, I will maintain that he is a loser by it. His employment should be a general attention to the whole: his thresher must be watched, or he will soon lose his wages in corn not threshed out, his mowers reapers, &c., must be looked after; he must constantly go round his fences; he must see there is no neglect; which would be the case if he was confined to any one spot." ("An Inquiry into the Connexion between the Present Price of Provisions and the Size of Farms, &c. By a Farmer." London, 1773, p. 12.) This book is very interesting. In it the genesis of the "capitalist farmer" or "merchant farmer," as he is explicitly called, may be studied, and his selfglorification at the expense of the small farmer who has only to do with bare subsistence, be noted. "The class of capitalists are from the first partially, and they become ultimately completely, discharged from the necessity of the manual labour." ("Textbook of Lectures on the Political Economy of Nations. By the Rev. Richard Jones." Hertford 1852. Lecture III., p. 39.)

[5] The molecular theory of modern chemistry first scientifically worked out by Laurent and Gerhardt rests on no other law. (Addition to 3rd Edition.) For the explanation of this statement, which is not very clear to nonchemists, we remark that the author speaks here of the homologous series of carbon compounds, first so named by C. Gerhardt in 1843, each series of which has its own general algebraic formula. Thus the series of paraffins:  $C_nH_{2n+2}$ , that of the normal alcohols:  $C_nH_{2n+2}O$ ; of the normal fatty acids:  $C_nH_{2n}O_2$  and many others. In the above examples, by the simply quantitative addition of  $CH_2$  to the molecular formula, a qualitatively different body is each time formed. On the share (overestimated by Marx) of Laurent and Gerhardt in the determination of this important fact see Kopp, "Entwicklung der Chemie." Munchen, 1873, pp. 709, 716, and Schorkmmer, "The Rise and Development of Organic Chemistry." London, 1879, p. 54. — F. E.

[6] Martin Luther calls these kinds of institutions: "The Company Monopolia."

[7] Reports of Insp. of Fact., April 30th, 1849, p. 59.

[8] I. c., p. 60. Factory Inspector Stuart, himself a Scotchman, and in contrast to the English Factory Inspectors, quite taken captive by the capitalistic method of thinking, remarks expressly on this letter which he incorporates in his report that it is "the most useful of the communications which any of the factoryowners working with relays have given to those engaged in the same trade, and which is the most calculated to remove the prejudices of such of them as have scruples respecting any change of the arrangement of the hours of work."

*Transcribed by Zodiac*

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From: <http://www.marxists.org/archive/marx/works/1867-c1/ch11.htm>

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# The Concept of Relative Surplus-Value

That portion of the working-day which merely produces an equivalent for the value paid by the capitalist for his labour-power, has, up to this point, been treated by us as a constant magnitude, and such in fact it is, under given conditions of production and at a given stage in the economic development of society. Beyond this, his necessary labour-time, the labourer, we saw, could continue to work for 2, 3, 4, 6, &c., hours. The rate of surplus-value and the length of the working-day depended on the magnitude of this prolongation. Though the necessary labour-time was constant, we saw, on the other hand, that the total working-day was variable. Now suppose we have a working-day whose length, and whose apportionment between necessary labour and surplus-labour, are given. Let the whole line  $a\ c$ ,  $abc$  represent, for example, a working-day of 12 hours; the portion of  $a\ b$  10 hours of necessary labour, and the portion  $b\ c$  2 hours of surplus-labour. How now can the production of surplus-value be increased, i.e., how can the surplus-labour be prolonged, without, or independently of, any prolongation of  $a\ c$ ?

Although the length of  $a\ c$  is given,  $b\ c$  appears to be capable of prolongation, if not by extension beyond its end  $c$ , which is also the end of the working-day  $a\ c$ , yet, at all events, by pushing back its starting-point  $b$  in the direction of  $a$ . Assume that  $b'b$  in the line  $ab'bc$  is equal to half of  $b\ c$  or to one hour's labour-time. If now, in  $a\ c$ , the working-day of 12 hours, we move the point  $b$  to  $b'$ ,  $b\ c$  becomes  $b'\ c$ ; the surplus-labour increases by one half, from 2 hours to 3 hours, although the working-day remains as before at 12 hours. This extension of the surplus labour-time from  $b\ c$  to  $b'\ c$ , from 2 hours to 3 hours, is, however, evidently impossible, without a simultaneous contraction of the necessary labour-time from  $a\ b$  into  $a\ b'$ , from 10 hours to 9 hours. The prolongation of the surplus-labour would correspond to a shortening of the necessary labour; or a portion of the labour-time previously consumed, in reality, for the labourer's own benefit, would be converted into labour-time for the benefit of the capitalist. There would be an alteration, not in the length of the working-day, but in its division into necessary labour-time and surplus labour-time.

On the other hand, it is evident that the duration of the surplus-labour is given, when the length of the working-day, and the value of labour-power, are given. The value of labour-power, i.e., the labour-time requisite to produce labour-power, determines the labour-time necessary for the reproduction of that value. If one working-hour be embodied in sixpence, and the value of a day's labour-power be

five shillings, the labourer must work 10 hours a day, in order to replace the value paid by capital for his labour-power, or to produce an equivalent for the value of his daily necessary means of subsistence. Given the value of these means of subsistence, the value of his labour-power is given; [1] and given the value of his labour-power, the duration of his necessary labour-time is given. The duration of the surplus-labour, however, is arrived at, by subtracting the necessary labour-time from the total working-day. Ten hours subtracted from twelve, leave two, and it is not easy to see, how, under the given conditions, the surplus-labour can possibly be prolonged beyond two hours. No doubt, the capitalist can, instead of five shillings, pay the labourer four shillings and sixpence or even less. For the reproduction of this value of four shillings and sixpence, nine hours' labour-time would suffice; and consequently three hours of surplus-labour, instead of two, would accrue to the capitalist, and the surplus-value would rise from one shilling to eighteen-pence. This result, however, would be obtained only by lowering the wages of the labourer below the value of his labour-power. With the four shillings and sixpence which he produces in nine hours, he commands one-tenth less of the necessaries of life than before, and consequently the proper reproduction of his labour-power is crippled. The surplus-labour would in this case be prolonged only by an overstepping of its normal limits; its domain would be extended only by a usurpation of part of the domain of necessary labour-time. Despite the important part which this method plays in actual practice, we are excluded from considering it in this place, by our assumption, that all commodities, including labour-power, are bought and sold at their full value. Granted this, it follows that the labour-time necessary for the production of labour-power, or for the reproduction of its value, cannot be lessened by a fall in the labourer's wages below the value of his labour-power, but only by a fall in this value itself. Given the length of the working-day, the prolongation of the surplus-labour must of necessity originate in the curtailment of the necessary labour-time; the latter cannot arise from the former. In the example we have taken, it is necessary that the value of labour-power should actually fall by one-tenth, in order that the necessary labour-time may be diminished by one-tenth, i.e., from ten hours to nine, and in order that the surplus labour may consequently be prolonged from two hours to three.

Such a fall in the value of labour-power implies, however, that the same necessaries of life which were formerly produced in ten hours, can now be produced in nine hours. But this is impossible without an increase in the productiveness of labour. For example, suppose a shoe-maker, with given tools, makes in one working-day of twelve hours, one pair of boots. If he must make two pairs in the same time, the productiveness of his labour must be doubled; and this cannot be done, except by an alteration in his tools or in his mode of working, or in both. Hence, the conditions of production, i.e., his mode of production, and the labour-process itself, must be revolutionised. By increase in the productiveness of labour, we mean, generally, an

alteration in the labour-process, of such a kind as to shorten the labour-time socially necessary for the production of a commodity, and to endow a given quantity of labour with the power of producing a greater quantity of use-value. [2] Hitherto in treating of surplus-value, arising from a simple prolongation of the working-day, we have assumed the mode of production to be given and invariable. But when surplus-value has to be produced by the conversion of necessary labour into surplus-labour, it by no means suffices for capital to take over the labour-process in the form under which it has been historically handed down, and then simply to prolong the duration of that process. The technical and social conditions of the process, and consequently the very mode of production must be revolutionised, before the productiveness of labour can be increased. By that means alone can the value of labour-power be made to sink, and the portion of the working-day necessary for the reproduction of that value, be shortened.

The surplus-value produced by prolongation of the working-day, I call *absolute surplus-value*. On the other hand, the surplus-value arising from the curtailment of the necessary labour-time, and from the corresponding alteration in the respective lengths of the two components of the working-day, I call *relative surplus-value*.

In order to effect a fall in the value of labour-power, the increase in the productiveness of labour must seize upon those branches of industry whose products determine the value of labour-power, and consequently either belong to the class of customary means of subsistence, or are capable of supplying the place of those means. But the value of a commodity is determined, not only by the quantity of labour which the labourer directly bestows upon that commodity, but also by the labour contained in the means of production. For instance, the value of a pair of boots depends not only on the cobbler's labour, but also on the value of the leather, wax, thread, &c. Hence, a fall in the value of labour-power is also brought about by an increase in the productiveness of labour, and by a corresponding cheapening of commodities in those industries which supply the instruments of labour and the raw material, that form the material elements of the constant capital required for producing the necessities of life. But an increase in the productiveness of labour in those branches of industry which supply neither the necessities of life, nor the means of production for such necessities, leaves the value of labour-power undisturbed.

The cheapened commodity, of course, causes only a pro tanto fall in the value of labour-power, a fall proportional to the extent of that commodity's employment in the reproduction of labour-power. Shirts, for instance, are a necessary means of subsistence, but are only one out of many. The totality of the necessities of life consists, however, of various commodities, each the product of a distinct industry; and the value of each of those commodities enters as a component part into the value of labour-power. This latter value decreases with the decrease of the labour-

time necessary for its reproduction; the total decrease being the sum of all the different curtailments of labour-time effected in those various and distinct industries. This general result is treated, here, as if it were the immediate result directly aimed at in each individual case. Whenever an individual capitalist cheapens shirts, for instance, by increasing the productiveness of labour he by no means necessarily aims at reducing the value of labour-power and shortening, *pro tanto* the necessary labour-time. But it is only in so far as he ultimately contributes to this result, that he assists in raising the general rate of surplus-value. [3] The general and necessary tendencies of capital must be distinguished from their forms of manifestation.

It is not our intention to consider, here, the way in which the laws, immanent in capitalist production, manifest themselves in the movements of individual masses of capital, where they assert themselves as coercive laws of competition, and are brought home to the mind and consciousness of the individual capitalist as the directing motives of his operations. But this much is clear; a scientific analysis of competition is not possible, before we have a conception of the inner nature of capital, just as the apparent motions of the heavenly bodies are not intelligible to any but him, who is acquainted with their real motions, motions which are not directly perceptible by the senses. Nevertheless, for the better comprehension of the production of relative surplus-value, we may add the following remarks, in which we assume nothing more than the results we have already obtained.

If one hour's labour is embodied in sixpence, a value of six shillings will be produced in a working-day of 12 hours. Suppose, that with the prevailing productiveness of labour, 12 articles are produced in these 12 hours. Let the value of the means of production used up in each article be sixpence. Under these circumstances, each article costs one shilling: sixpence for the value of the means of production, and sixpence for the value newly added in working with those means. Now let some one capitalist contrive to double the productiveness of labour, and to produce in the working-day of 12 hours, 24 instead of 12 such articles. The value of the means of production remaining the same, the value of each article will fall to ninepence, made up of sixpence for the value of the means of production and threepence for the value newly added by the labour. Despite the doubled productiveness of labour, the day's labour creates, as before, a new value of six shillings and no more, which, however, is now spread over twice as many articles. Of this value each article now has embodied in it  $\frac{1}{24}$ th, instead of  $\frac{1}{12}$ th, threepence instead of sixpence; or, what amounts to the same thing, only half an hour's instead of a whole hour's labour-time, is now added to the means of production while they are being transformed into each article. The individual value of these articles is now below their social value; in other words, they have cost less labour-time than the great bulk of the same article produced under the average social conditions. Each article costs, on an average, one shilling, and represents 2 hours of social labour; but under

the altered mode of production it costs only ninepence, or contains only  $1\frac{1}{2}$  hours' labour. The real value of a commodity is, however, not its individual value, but its social value; that is to say, the real value is not measured by the labour-time that the article in each individual case costs the producer, but by the labour-time socially required for its production. If therefore, the capitalist who applies the new method, sells his commodity at its social value of one shilling, he sells it for threepence above its individual value, and thus realises an extra surplus-value of threepence. On the other hand, the working-day of 12 hours is, as regards him, now represented by 24 articles instead of 12. Hence, in order to get rid of the product of one working-day, the demand must be double what it was, i.e., the market must become twice as extensive. Other things being equal, his commodities can command a more extended market only by a diminution of their prices. He will therefore sell them above their individual but under their social value, say at tenpence each. By this means he still squeezes an extra surplus-value of one penny out of each. This augmentation of surplus-value is pocketed by him, whether his commodities belong or not to the class of necessary means of subsistence that participate in determining the general value of labour-power. Hence, independently of this latter circumstance, there is a motive for each individual capitalist to cheapen his commodities, by increasing the productiveness of labour.

Nevertheless, even in this case, the increased production of surplus-value arises from the curtailment of the necessary labour-time, and from the corresponding prolongation of the surplus-labour. [4] Let the necessary labour-time amount to 10 hours, the value of a day's labour-power to five shillings, the surplus labour-time to 2 hours, and the daily surplus-value to one shilling. But the capitalist now produces 24 articles, which he sells at tenpence a-piece, making twenty shillings in all. Since the value of the means of production is twelve shillings,  $14\frac{2}{5}$  of these articles merely replace the constant capital advanced. The labour of the 12 hours' working-day is represented by the remaining  $9\frac{3}{5}$  articles. Since the price of the labour-power is five shillings, 6 articles represent the necessary labour-time, and  $3\frac{3}{5}$  articles the surplus-labour. The ratio of the necessary labour to the surplus-labour, which under average social conditions was 5:1, is now only 5:3. The same result may be arrived at in the following way. The value of the product of the working-day of 12 hours is twenty shillings. Of this sum, twelve shillings belong to the value of the means of production, a value that merely re-appears. There remain eight shillings, which are the expression in money, of the value newly created during the working-day. This sum is greater than the sum in which average social labour of the same kind is expressed: twelve hours of the latter labour are expressed by six shillings only. The exceptionally productive labour operates as intensified labour; it creates in equal periods of time greater values than average social labour of the same kind. (See Ch. I. Sect 2. p. 44.) But our capitalist still continues to pay as before only five shillings as the value of a day's labour-power. Hence, instead of 10 hours,

the labourer need now work only  $7\frac{1}{2}$  hours, in order to reproduce this value. His surplus-labour is, therefore, increased by  $2\frac{1}{2}$  hours, and the surplus-value he produces grows from one, into three shillings. Hence, the capitalist who applies the improved method of production, appropriates to surplus-labour a greater portion of the working-day, than the other capitalists in the same trade. He does individually, what the whole body of capitalists engaged in producing relative surplus-value, do collectively. On the other hand, however, this extra surplus-value vanishes, so soon as the new method of production has become general, and has consequently caused the difference between the individual value of the cheapened commodity and its social value to vanish. The law of the determination of value by labour-time, a law which brings under its sway the individual capitalist who applies the new method of production, by compelling him to sell his goods under their social value, this same law, acting as a coercive law of competition, forces his competitors to adopt the new method. [5] The general rate of surplus-value is, therefore, ultimately affected by the whole process, only when the increase in the productiveness of labour, has seized upon those branches of production that are connected with, and has cheapened those commodities that form part of, the necessary means of subsistence, and are therefore elements of the value of labour-power.

The value of commodities is in inverse ratio to the productiveness of labour. And so, too, is the value of labour-power, because it depends on the values of commodities. Relative surplus-value is, on the contrary, directly proportional to that productiveness. It rises with rising and falls with falling productiveness. The value of money being assumed to be constant, an average social working-day of 12 hours always produces the same new value, six shillings, no matter how this sum may be apportioned between surplus-value and wages. But if, in consequence of increased productiveness, the value of the necessities of life fall, and the value of a day's labour-power be thereby reduced from five shillings to three, the surplus-value increases from one shilling to three. Ten hours were necessary for the reproduction of the value of the labour-power; now only six are required. Four hours have been set free, and can be annexed to the domain of surplus-labour. Hence there is immanent in capital an inclination and constant tendency, to heighten the productiveness of labour, in order to cheapen commodities, and by such cheapening to cheapen the labourer himself. [6]

The value of a commodity is, in itself, of no interest to the capitalist. What alone interests him, is the surplus-value that dwells in it, and is realisable by sale. Realisation of the surplus-value necessarily carries with it the refunding of the value that was advanced. Now, since relative surplus-value increases in direct proportion to the development of the productiveness of labour, while, on the other hand, the value of commodities diminishes in the same proportion; since one and the same process cheapens commodities, and augments the surplus-value contained in them;

we have here the solution of the riddle: why does the capitalist, whose sole concern is the production of exchange-value, continually strive to depress the exchange-value of commodities? A riddle with which Quesnay, one of the founders of Political Economy, tormented his opponents, and to which they could give him no answer. "You acknowledge," he says, "that the more expenses and the cost of labour can, in the manufacture of industrial products, be reduced without injury to production, the more advantageous is such reduction, because it diminishes the price of the finished article. And yet, you believe that the production of wealth, which arises from the labour of the workpeople, consists in the augmentation of the exchange-value of their products." [7]

The shortening of the working-day is, therefore, by no means what is aimed at, in capitalist production, when labour is economised by increasing its productiveness. [8] It is only the shortening of the labour-time, necessary for the production of a definite quantity of commodities, that is aimed at. The fact that the workman, when the productiveness of his labour has been increased, produces, say 10 times as many commodities as before, and thus spends one-tenth as much labour-time on each, by no means prevents him from continuing to work 12 hours as before, nor from producing in those 12 hours 1,200 articles instead of 120. Nay, more, his working-day may be prolonged at the same time, so as to make him produce, say 1,400 articles in 14 hours. In the treatises, therefore, of economists of the stamp of MacCulloch, Ure, Senior, and tutti quanti, we may read upon one page, that the labourer owes a debt of gratitude to capital for developing his productiveness, because the necessary labour-time is thereby shortened, and on the next page, that he must prove his gratitude by working in future for 15 hours instead of 10. The object of all development of the productiveness of labour, within the limits of capitalist production, is to shorten that part of the working-day, during which the workman must labour for his own benefit, and by that very shortening, to lengthen the other part of the day, during which he is at liberty to work gratis for the capitalist. How far this result is also attainable, without cheapening commodities, will appear from an examination of the particular modes of producing relative surplus-value, to which examination we now proceed.

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## Footnotes

[1] The value of his average daily wages is determined by what the labourer requires "so as to live, labour, and generate." (Wm. Petty: "Political Anatomy of Ireland," 1672, p. 64.) "The price of Labour is always constituted of the price of necessaries ... whenever ... the labouring man's wages will not, suitably to his low rank and station, as a labouring man, support such a family as is often the lot of many of them to have," he does not receive proper wages. (J. Vanderlint, l. c., p. 15.) "Le simple ouvrier, qui n'a que ses bras et son industrie, n'a rien qu'autant qu'il parvient à vendre à d'autres sa peine... En tout genre de travail il doit arriver, et il arrive en effet, que le salaire de l'ouvrier se borne à ce qui lui est nécessaire pour lui procurer sa subsistance." (Turgot,

"Réflexions, &c.," Oeuvres, éd. Daire t. I, p. 10.) "The price of the necessities of life is, in fact, the cost of producing labour." (Malthus, "Inquiry into, &c., Rent," London, 1815, p. 48, note.)

[2] "Quando si perfezionano le arti, che non è altro che la scoperta di nuove vie, onde si possa compiere una manifattura con meno gente o (che è lo stesso) in minor tempo di prima." (Galiani, l. c., p. 159.) "L'économie sur les frais de production ne peut donc être autre chose que l'économie sur la quantité de travail employé pour produire." (Sismondi, "Etudes," t. I. p. 22.)

[3] "Let us suppose ... the products ... of the manufacturer are doubled by improvement in machinery ... he will be able to clothe his workmen by means of a smaller proportion of the entire return ... and thus his profit will be raised. But in no other way will it be influenced." (Ramsay, l. c., pp. 168, 169.)

[4] "A man's profit does not depend upon his command of the produce of other men's labour, but upon his command of labour itself. If he can sell his goods at a higher price, while his workmen's wages remain unaltered, he is clearly benefited.... A smaller proportion of what he produces is sufficient to put that labour into motion, and a larger proportion consequently remains for himself." ("Outlines of Pol. Econ." London, 1832, pp. 49, 50.)

[5] "If my neighbour by doing much with little labour, can sell cheap, I must contrive to sell as cheap as he. So that every art, trade, or engine, doing work with labour of fewer hands, and consequently cheaper, begets in others a kind of necessity and emulation, either of using the same art, trade, or engine, or of inventing something like it, that every man may be upon the square, that no man may be able to undersell his neighbour." ("The Advantages of the East India Trade to England", London, 1720, p. 67.)

[6] "In whatever proportion the expenses of a labourer are diminished, in the same proportion will his wages be diminished, if the restraints upon industry are at the same time taken off." ("Considerations Concerning Taking off the Bounty on Corn Exported," &c., London, 1753, p. 7.) "The interest of trade requires, that corn and all provisions should be as cheap as possible; for whatever makes them dear, must make labour dear also ... in all countries, where industry is not restrained, the price of provisions must affect the price of labour. This will always be diminished when the necessities of life grow cheaper." (l. c., p. 3.) "Wages are decreased in the same proportion as the powers of production increase. Machinery, it is true, cheapens the necessities of life, but it also cheapens the labourer." ("A Prize Essay on the Comparative Merits of Competition and Co-operation." London, 1834, p. 27.)

[7] "Ils conviennent que plus on peut, sans préjudice, épargner de frais ou de travaux dispendieux dans la fabrication des ouvrages des artisans, plus cette épargne est profitable par la diminution des prix de ces ouvrages. Cependant ils croient que la production de richesse qui résulte des travaux des artisans consiste dans l'augmentation de la valeur vénale de leurs ouvrages." (Quesnay: "Dialogues sur le Commerce et les Travaux des Artisans." pp. 188, 189.)

[8] "Ces spéculateurs si économes du travail des ouvriers qu'il faudrait qu'ils payassent." (J. N. Bidaut: "Du Monopole qui s'établit dans les arts industriels et le commerce." Paris, 1828, p. 13.) "The employer will be always on the stretch to economise time and labour." (Dugald Stewart: Works ed. by Sir W. Hamilton, Edinburgh, v., viii., 1855. "Lectures on Polit. Econ.," p. 318.) "Their (the capitalists') interest is that the productive powers of the labourers they employ should be the greatest possible. On promoting that power their attention is fixed and almost exclusively fixed." (R. Jones: l. c., Lecture III.)

*Transcribed by Hinrich Kuhls*

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# Co-operation

Capitalist production only then really begins, as we have already seen, when each individual capital employs simultaneously a comparatively large number of labourers; when consequently the labour-process is carried on on an extensive scale and yields, relatively, large quantities of products. A greater number of labourers working together, at the same time, in one place (or, if you will, in the same field of labour), in order to produce the same sort of commodity under the mastership of one capitalist, constitutes, both historically and logically, the starting-point of capitalist production. With regard to the mode of production itself, manufacture, in its strict meaning, is hardly to be distinguished, in its earliest stages, from the handicraft trades of the guilds, otherwise than by the greater number of workmen simultaneously employed by one and the same individual capital. The workshop of the medieval master handicraftsman is simply enlarged.

At first, therefore, the difference is purely quantitative. We have shown that the surplus-value produced by a given capital is equal to the surplus-value produced by each workman multiplied by the number of workmen simultaneously employed. The number of workmen in itself does not affect, either the rate of surplus-value, or the degree of exploitation of labour-power. If a working-day of 12 hours be embodied in six shillings, 1,200 such days will be embodied in 1,200 times 6 shillings. In one case 12 x 1,200 working-hours, and in the other 12 such hours are incorporated in the product. In the production of value a number of workmen rank merely as so many individual workmen; and it therefore makes no difference in the value produced whether the 1,200 men work separately, or united under the control of one capitalist.

Nevertheless, within certain limits, a modification takes place. The labour realised in value, is labour of an average social quality; is consequently the expenditure of average labour-power. Any average magnitude, however, is merely the average of a number of separate magnitudes all of one kind, but differing as to quantity. In every industry, each individual labourer, be he Peter or Paul, differs from the average labourer. These individual differences, or "errors" as they are called in mathematics, compensate one another, and vanish, whenever a certain minimum number of workmen are employed together. The celebrated sophist and sycophant, Edmund Burke, goes so far as to make the following assertion, based on his practical observations as a farmer; viz., that "in so small a platoon" as that of five farm

labourers, all individual differences in the labour vanish, and that consequently any given five adult farm labourers taken together, will in the same time do as much work as any other five. [1] But, however that may be, it is clear, that the collective working-day of a large number of workmen simultaneously employed, divided by the number of these workmen, gives one day of average social labour. For example, let the working-day of each individual be 12 hours. Then the collective working-day of 12 men simultaneously employed, consists of 144 hours; and although the labour of each of the dozen men may deviate more or less from average social labour, each of them requiring a different time for the same operation, yet since the working-day of each is one-twelfth of the collective working-day of 144 hours, it possesses the qualities of an average social working-day. From the point of view, however, of the capitalist who employs these 12 men, the working-day is that of the whole dozen. Each individual man's day is an aliquot part of the collective working-day, no matter whether the 12 men assist one another in their work, or whether the connexion between their operations consists merely in the fact, that the men are all working for the same capitalist. But if the 12 men are employed in six pairs, by as many different small masters, it will be quite a matter of chance, whether each of these masters produces the same value, and consequently whether he realises the general rate of surplus-value. Deviations would occur in individual cases. If one workman required considerably more time for the production of a commodity than is socially necessary, the duration of the necessary labour-time would, in his case, sensibly deviate from the labour-time socially necessary on an average; and consequently his labour would not count as average labour, nor his labour-power as average labour-power. It would either be not saleable at all, or only at something below the average value of labour-power. A fixed minimum of efficiency in all labour is therefore assumed, and we shall see, later on, that capitalist production provides the means of fixing this minimum. Nevertheless, this minimum deviates from the average, although on the other hand the capitalist has to pay the average value of labour-power. Of the six small masters, one would therefore squeeze out more than the average rate of surplus-value, another less. The inequalities would be compensated for the society at large, but not for the individual masters. Thus the laws of the production of value are only fully realised for the individual producer, when he produces as a capitalist, and employs a number of workmen together, whose labour, by its collective nature, is at once stamped as average social labour. [2]

Even without an alteration in the system of working, the simultaneous employment of a large number of labourers effects a revolution in the material conditions of the labour-process. The buildings in which they work, the store-houses for the raw material, the implements and utensils used simultaneously or in turns by the workmen; in short, a portion of the means of production, are now consumed in common. On the one hand, the exchange-value of these means of production is not

increased; for the exchange-value of a commodity is not raised by its use-value being consumed more thoroughly and to greater advantage. On the other hand, they are used in common, and therefore on a larger scale than before. A room where twenty weavers work at twenty looms must be larger than the room of a single weaver with two assistants. But it costs less labour to build one workshop for twenty persons than to build ten to accommodate two weavers each; thus the value of the means of production that are concentrated for use in common on a large scale does not increase in direct proportion to the expansion and to the increased useful effect of those means. When consumed in common, they give up a smaller part of their value to each single product; partly because the total value they part with is spread over a greater quantity of products, and partly because their value, though absolutely greater, is, having regard to their sphere of action in the process, relatively less than the value of isolated means of production. Owing to this, the value of a part of the constant capital falls, and in proportion to the magnitude of the fall, the total value of the commodity also falls. The effect is the same as if the means of production had cost less. The economy in their application is entirely owing to their being consumed in common by a large number of workmen. Moreover, this character of being necessary conditions of social labour, a character that distinguishes them from the dispersed and relatively more costly means of production of isolated, independent labourers, or small masters, is acquired even when the numerous workmen assembled together do not assist one another, but merely work side by side. A portion of the instruments of labour acquires this social character before the labour-process itself does so.

Economy in the use of the means of production has to be considered under two aspects. First, as cheapening commodities, and thereby bringing about a fall in the value of labour-power. Secondly, as altering the ratio of the surplus-value to the total capital advanced, i.e., to the sum of the values of the constant and variable capital. The latter aspect will not be considered until we come to the third book, to which, with the object of treating them in their proper connexion, we also relegate many other points that relate to the present question. The march of our analysis compels this splitting up of the subject-matter, a splitting up that is quite in keeping with the spirit of capitalist production. For since, in this mode of production, the workman finds the instruments of labour existing independently of him as another man's property, economy in their use appears, with regard to him, to be a distinct operation, one that does not concern him, and which, therefore, has no connexion with the methods by which his own personal productiveness is increased.

When numerous labourers work together side by side, whether in one and the same process, or in different but connected processes, they are said to co-operate, or to work in co-operation. [3]

Just as the offensive power of a squadron of cavalry, or the defensive power of a regiment of infantry is essentially different from the sum of the offensive or defensive powers of the individual cavalry or infantry soldiers taken separately, so the sum total of the mechanical forces exerted by isolated workmen differs from the social force that is developed, when many hands take part simultaneously in one and the same undivided operation, such as raising a heavy weight, turning a winch, or removing an obstacle. [4] In such cases the effect of the combined labour could either not be produced at all by isolated individual labour, or it could only be produced by a great expenditure of time, or on a very dwarfed scale. Not only have we here an increase in the productive power of the individual, by means of co-operation, but the creation of a new power, namely, the collective power of masses. [5]

Apart from the new power that arises from the fusion of many forces into one single force, mere social contact begets in most industries an emulation and a stimulation of the animal spirits that heighten the efficiency of each individual workman. Hence it is that a dozen persons working together will, in their collective working-day of 144 hours, produce far more than twelve isolated men each working 12 hours, or than one man who works twelve days in succession. [6] The reason of this is that man is, if not as Aristotle contends, a political, [7] at all events a social animal.

Although a number of men may be occupied together at the same time on the same, or the same kind of work, yet the labour of each, as a part of the collective labour, may correspond to a distinct phase of the labour-process, through all whose phases, in consequence of co-operation, the subject of their labour passes with greater speed. For instance, if a dozen masons place themselves in a row, so as to pass stones from the foot of a ladder to its summit, each of them does the same thing; nevertheless, their separate acts form connected parts of one total operation; they are particular phases, which must be gone through by each stone; and the stones are thus carried up quicker by the 24 hands of the row of men than they could be if each man went separately up and down the ladder with his burden. [8] The object is carried over the same distance in a shorter time. Again, a combination of labour occurs whenever a building, for instance, is taken in hand on different sides simultaneously; although here also the co-operating masons are doing the same, or the same kind of work. The 12 masons, in their collective working-day of 144 hours, make much more progress with the building than one mason could make working for 12 days, or 144 hours. The reason is, that a body of men working in concert has hands and eyes both before and behind, and is, to a certain degree, omnipresent. The various parts of the work progress simultaneously.

In the above instances we have laid stress upon the point that the men do the same, or the same kind of work, because this, the most simple form of labour in common, plays a great part in co-operation, even in its most fully developed stage. If the work be complicated, then the mere number of the men who co-operate allows of the various operations being apportioned to different hands, and, consequently, of being carried on simultaneously. The time necessary for the completion of the whole work is thereby shortened. [9]

In many industries, there are critical periods, determined by the nature of the process, during which certain definite results must be obtained. For instance, if a flock of sheep has to be shorn, or a field of wheat to be cut and harvested, the quantity and quality of the product depends on the work being begun and ended within a certain time. In these cases, the time that ought to be taken by the process is prescribed, just as it is in herring fishing. A single person cannot carve a working-day of more than, say 12 hours, out of the natural day, but 100 men co-operating extend the working-day to 1,200 hours. The shortness of the time allowed for the work is compensated for by the large mass of labour thrown upon the field of production at the decisive moment. The completion of the task within the proper time depends on the simultaneous application of numerous combined working-days; the amount of useful effect depends on the number of labourers; this number, however, is always smaller than the number of isolated labourers required to do the same amount of work in the same period. [10] It is owing to the absence of this kind of co-operation that, in the western part of the United States, quantities of corn, and in those parts of East India where English rule has destroyed the old communities, quantities of cotton, are yearly wasted. [11]

On the one hand, co-operation allows of the work being carried on over an extended space; it is consequently imperatively called for in certain undertakings, such as draining, constructing dykes, irrigation works, and the making of canals, roads and railways. On the other hand, while extending the scale of production, it renders possible a relative contraction of the arena. This contraction of arena simultaneous with, and arising from, extension of scale, whereby a number of useless expenses are cut down, is owing to the conglomeration of labourers, to the aggregation of various processes, and to the concentration of the means of production. [12]

The combined working-day produces, relatively to an equal sum of isolated working-days, a greater quantity of use-values, and, consequently, diminishes the labour-time necessary for the production of a given useful effect. Whether the combined working-day, in a given case, acquires this increased productive power, because it heightens the mechanical force of labour, or extends its sphere of action over a greater space, or contracts the field of production relatively to the scale of production, or at the critical moment sets large masses of labour to work, or excites

emulation between individuals and raises their animal spirits, or impresses on the similar operations carried on by a number of men the stamp of continuity and many-sidedness, or performs simultaneously different operations, or economises the means of production by use in common, or lends to individual labour the character of average social labour whichever of these be the cause of the increase, the special productive power of the combined working-day is, under all circumstances, the social productive power of labour, or the productive power of social labour. This power is due to co-operation itself. When the labourer co-operates systematically with others, he strips off the fetters of his individuality, and develops the capabilities of his species. [13]

As a general rule, labourers cannot co-operate without being brought together: their assemblage in one place is a necessary condition of their co-operation. Hence wage-labourers cannot co-operate, unless they are employed simultaneously by the same capital, the same capitalist, and unless therefore their labour-powers are bought simultaneously by him. The total value of these labour-powers, or the amount of the wages of these labourers for a day, or a week, as the case may be, must be ready in the pocket of the capitalist, before the workmen are assembled for the process of production. The payment of 300 workmen at once, though only for one day, requires a greater outlay of capital, than does the payment of a smaller number of men, week by week, during a whole year. Hence the number of the labourers that co-operate, or the scale of co-operation, depends, in the first instance, on the amount of capital that the individual capitalist can spare for the purchase of labour-power; in other words, on the extent to which a single capitalist has command over the means of subsistence of a number of labourers.

And as with the variable, so it is with the constant capital. For example, the outlay on raw material is 30 times as great, for the capitalist who employs 300 men, as it is for each of the 30 capitalists who employ 10 men. The value and quantity of the instruments of labour used in common do not, it is true, increase at the same rate as the number of workmen, but they do increase very considerably. Hence, concentration of large masses of the means of production in the hands of individual capitalists, is a material condition for the co-operation of wage-labourers, and the extent of the co-operation or the scale of production, depends on the extent of this concentration.

We saw in a former chapter, that a certain minimum amount of capital was necessary, in order that the number of labourers simultaneously employed, and, consequently, the amount of surplus-value produced, might suffice to liberate the employer himself from manual labour, to convert him from a small master into a capitalist, and thus formally to establish capitalist production. We now see that a certain minimum amount is a necessary condition for the conversion of numerous isolated and independent processes into one combined social process.

We also saw that at first, the subjection of labour to capital was only a formal result of the fact, that the labourer, instead of working for himself, works for and consequently under the capitalist. By the co-operation of numerous wage-labourers, the sway of capital develops into a requisite for carrying on the labour-process itself, into a real requisite of production. That a capitalist should command on the field of production, is now as indispensable as that a general should command on the field of battle.

All combined labour on a large scale requires, more or less, a directing authority, in order to secure the harmonious working of the individual activities, and to perform the general functions that have their origin in the action of the combined organism, as distinguished from the action of its separate organs. A single violin player is his own conductor; an orchestra requires a separate one. The work of directing, superintending, and adjusting, becomes one of the functions of capital, from the moment that the labour under the control of capital, becomes co-operative. Once a function of capital, it acquires special characteristics.

The directing motive, the end and aim of capitalist production, is to extract the greatest possible amount of surplus-value, [14] and consequently to exploit labour-power to the greatest possible extent. As the number of the co-operating labourers increases, so too does their resistance to the domination of capital, and with it, the necessity for capital to overcome this resistance by counterpressure. The control exercised by the capitalist is not only a special function, due to the nature of the social labour-process, and peculiar to that process, but it is, at the same time, a function of the exploitation of a social labour-process, and is consequently rooted in the unavoidable antagonism between the exploiter and the living and labouring raw material he exploits.

Again, in proportion to the increasing mass of the means of production, now no longer the property of the labourer, but of the capitalist, the necessity increases for some effective control over the proper application of those means. [15] Moreover, the co-operation of wage-labourers is entirely brought about by the capital that employs them. Their union into one single productive body and the establishment of a connexion between their individual functions, are matters foreign and external to them, are not their own act, but the act of the capital that brings and keeps them together. Hence the connexion existing between their various labours appears to them, ideally, in the shape of a preconceived plan of the capitalist, and practically in the shape of the authority of the same capitalist, in the shape of the powerful will of another, who subjects their activity to his aims. If, then, the control of the capitalist is in substance two-fold by reason of the two-fold nature of the process of production itself, which, on the one hand, is a social process for producing use-values, on the other, a process for creating surplus-value in form that control is despotic. As co-operation extends its scale, this despotism takes forms peculiar to

itself. Just as at first the capitalist is relieved from actual labour so soon as his capital has reached that minimum amount with which capitalist production, as such, begins, so now, he hands over the work of direct and constant supervision of the individual workmen, and groups of workmen, to a special kind of wage-labourer. An industrial army of workmen, under the command of a capitalist, requires, like a real army, officers (managers), and sergeants (foremen, overlookers), who, while the work is being done, command in the name of the capitalist. The work of supervision becomes their established and exclusive function. When comparing the mode of production of isolated peasants and artisans with production by slave-labour, the political economist counts this labour of superintendence among the *faux frais* of production. [16] But, when considering the capitalist mode of production, he, on the contrary, treats the work of control made necessary by the co-operative character of the labour-process as identical with the different work of control, necessitated by the capitalist character of that process and the antagonism of interests between capitalist and labourer. [17] It is not because he is a leader of industry that a man is a capitalist; on the contrary, he is a leader of industry because he is a capitalist. The leadership of industry is an attribute of capital, just as in feudal times the functions of general and judge, were attributes of landed property. [18]

The labourer is the owner of his labour-power until he has done bargaining for its sale with the capitalist; and he can sell no more than what he has i.e., his individual, isolated labour-power. This state of things is in no way altered by the fact that the capitalist, instead of buying the labour-power of one man, buys that of 100, and enters into separate contracts with 100 unconnected men instead of with one. He is at liberty to set the 100 men to work, without letting them co-operate. He pays them the value of 100 independent labour-powers, but he does not pay for the combined labour-power of the hundred. Being independent of each other, the labourers are isolated persons, who enter into relations with the capitalist, but not with one another. This co-operation begins only with the labour-process, but they have then ceased to belong to themselves. On entering that process, they become incorporated with capital. As co-operators, as members of a working organism, they are but special modes of existence of capital. Hence, the productive power developed by the labourer when working in co-operation, is the productive power of capital. This power is developed gratuitously, whenever the workmen are placed under given conditions, and it is capital that places them under such conditions. Because this power costs capital nothing, and because, on the other hand, the labourer himself does not develop it before his labour belongs to capital, it appears as a power with which capital is endowed by Nature a productive power that is immanent in capital.

The colossal effects of simple co-operation are to be seen in the gigantic structures of the ancient Asiatics, Egyptians, Etruscans, &c. "It has happened in times past that



these Oriental States, after supplying the expenses of their civil and military establishments, have found themselves in possession of a surplus which they could apply to works of magnificence or utility and in the construction of these their command over the hands and arms of almost the entire non-agricultural population has produced stupendous monuments which still indicate their power. The teeming valley of the Nile ... produced food for a swarming non-agricultural population, and this food, belonging to the monarch and the priesthood, afforded the means of erecting the mighty monuments which filled the land.... In moving the colossal statues and vast masses of which the transport creates wonder, human labour almost alone, was prodigally used.... The number of the labourers and the concentration of their efforts sufficed. We see mighty coral reefs rising from the depths of the ocean into islands and firm land, yet each individual depositor is puny, weak, and contemptible. The non-agricultural labourers of an Asiatic monarchy have little but their individual bodily exertions to bring to the task, but their number is their strength, and the power of directing these masses gave rise to the palaces and temples, the pyramids, and the armies of gigantic statues of which the remains astonish and perplex us. It is that confinement of the revenues which feed them, to one or a few hands, which makes such undertakings possible." [19] This power of Asiatic and Egyptian kings, Etruscan theocrats, &c., has in modern society been transferred to the capitalist, whether he be an isolated, or as in joint-stock companies, a collective capitalist.

Co-operation, such as we find it at the dawn of human development, among races who live by the chase, [20] or, say, in the agriculture of Indian communities, is based, on the one hand, on ownership in common of the means of production, and on the other hand, on the fact, that in those cases, each individual has no more torn himself off from the navel-string of his tribe or community, than each bee has freed itself from connexion with the hive. Such co-operation is distinguished from capitalistic co-operation by both of the above characteristics. The sporadic application of co-operation on a large scale in ancient times, in the middle ages, and in modern colonies, reposes on relations of dominion and servitude, principally on slavery. The capitalistic form, on the contrary, pre-supposes from first to last, the free wage-labourer, who sells his labour-power to capital. Historically, however, this form is developed in opposition to peasant agriculture and to the carrying on of independent handicrafts whether in guilds or not. [21] From the standpoint of these, capitalistic co-operation does not manifest itself as a particular historical form of co-operation, but co-operation itself appears to be a historical form peculiar to, and specifically distinguishing, the capitalist process of production.

Just as the social productive power of labour that is developed by co-operation, appears to be the productive power of capital, so co-operation itself, contrasted with the process of production carried on by isolated independent labourers, or even by small employers, appears to be a specific form of the capitalist process of

production. It is the first change experienced by the actual labour-process, when subjected to capital. This change takes place spontaneously. The simultaneous employment of a large number of wage-labourers, in one and the same process, which is a necessary condition of this change, also forms the starting-point of capitalist production. This point coincides with the birth of capital itself. If then, on the one hand, the capitalist mode of production presents itself to us historically, as a necessary condition to the transformation of the labour-process into a social process, so, on the other hand, this social form of the labour-process presents itself, as a method employed by capital for the more profitable exploitation of labour, by increasing that labour's productiveness.

In the elementary form, under which we have hitherto viewed it, co-operation is a necessary concomitant of all production on a large scale, but it does not, in itself, represent a fixed form characteristic of a particular epoch in the development of the capitalist mode of production. At the most it appears to do so, and that only approximately, in the handicraft-like beginnings of manufacture, [22] and in that kind of agriculture on a large scale, which corresponds to the epoch of manufacture, and is distinguished from peasant agriculture, mainly by the number of the labourers simultaneously employed, and by the mass of the means of production concentrated for their use. Simple co-operation is always the prevailing form, in those branches of production in which capital operates on a large scale, and division of labour and machinery play but a subordinate part.

Co-operation ever constitutes the fundamental form of the capitalist mode of production, nevertheless the elementary form of co-operation continues to subsist as a particular form of capitalist production side by side with the more developed forms of that mode of production.

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## Footnotes

[1] "Unquestionably, there is a good deal of difference between the value of one man's labour and that of another from strength, dexterity, and honest application. But I am quite sure, from my best observation, that any given five men will, in their total, afford a proportion of labour equal to any other five within the periods of life I have stated; that is, that among such five men there will be one possessing all the qualifications of a good workman, one bad, and the other three middling, and approximating to the first, and the last. So that in so small a platoon as that of even five, you will find the full complement of all that five men can earn." (E. Burke, 1. c., pp. 15, 16.) Compare Quételet on the average individual.

[2] Professor Roscher claims to have discovered that one needlewoman employed by Mrs. Roscher during two days, does more work than two needlewomen employed together during one day. The learned professor should not study the capitalist process of production in the nursery, nor under circumstances where the principal personage, the capitalist, is wanting.

[3] "Concours de forces." (Destutt de Tracy, l. c., p. 80.)

[4] There are numerous operations of so simple a kind as not to admit a division into parts, which cannot be performed without the co-operation of many pairs of hands. I would instance the lifting

of a large tree on to a wain .., everything, in short, which cannot be done unless a great many pairs of hands help each other in the same undivided employment and at the same time." (E. G. Wakefield: "A View of the Art of Colonisation." London, 1849, p. 168.)

[5] "As one man cannot, and ten men must strain to lift a ton of weight, yet 100 men can do it only by the strength of a finger of each of them." (John Betters: "Proposals for Raising a Colledge of Industry." London, 1696, p. 21.)

[6] "There is also" (when the same number of men are employed by one farmer on 300 acres, instead of by ten farmers with 30 acres a piece) "an advantage in the proportion of servants, which will not so easily be understood but by practical men; for it is natural to say, as 1 is to 4, so are 3 to 12; but this will not hold good in practice; for in harvest time and many other operations which require that kind of despatch by the throwing many hands together, the work is better and more expeditiously done: f i. in harvest, 2 drivers, 2 loaders, 2 pitchers, 2 rakers, and the rest at the rick, or in the barn, will despatch double the work that the same number of hands would do if divided into different gangs on different farms." ("An Inquiry into the Connexion between the Present Price of Provisions and the Size of Farms." By a Farmer. London, 1773, pp. 7, 8.)

[7] Strictly, Aristotle's definition is that man is by nature a town-citizen. This is quite as characteristic of ancient classical society as Franklin's definition of man, as a tool-making animal, is characteristic of Yankeedom.

[8] "On doit encore remarquer que cette division partielle de travail peut se faire quand même les ouvriers sont occupés d'une même besogne. Des maçons par exemple, occupés à faire passer de mains en mains des briques à un échafaudage supérieur, font tous la même besogne, et pourtant il existe parmi eux une espèce de division de travail, qui consiste en ce que chacun d'eux fait passer la brique par un espace donné, et que tous ensemble la font parvenir beaucoup plus promptement à l'endroit marqué qu'ils ne le feraient si chacun d'eux portait sa brique séparément jusqu'à l'échafaudage supérieur." (F. Skarbek: "Théorie des richesses sociales." Paris, 1839, t. I, pp. 97, 98.)

[9] "Est-il question d'exécuter un travail compliqué, plusieurs choses doivent être faites simultanément. L'un en fait une pendant que l'autre en fait une autre, et tous contribuent à l'effet qu'un seul homme n'aurait pu produire. L'un rame pendant que l'autre tient le gouvernail, et qu'un troisième jette le filet on harponne le poisson, et la pêche a un succès impossible sans ce concours." (Destutt de Tracy, l. c.)

[10] "The doing of it (agricultural work) at the critical juncture is of so much the greater consequence." ("An Inquiry into the Connexion between the Present Price," &c., p. 9.) "In agriculture, there is no more important factor than that of time." (Liebig: "Ueber Theorie und Praxis in der Landwirtschaft." 1856, p. 23.)

[11] "The next evil is one which one would scarcely expect to find in a country which exports more labour than any other in the world, with the exception, perhaps, of China and England the impossibility of procuring a sufficient number of hands to clean the cotton. The consequence of this is that large quantities of the crop are left unpicked, while another portion is gathered from the ground when it has fallen, and is of course discoloured and partially rotted, so that for want of labour at the proper season the cultivator is actually forced to submit to the loss of a large part of that crop for which England is so anxiously looking." ("Bengal Hurkaru." Bi-Monthly Overland Summary of News, 22nd July, 1861.)

[12] In the progress of culture "all, and perhaps more than all, the capital and labour which once loosely occupied 500 acres, are now concentrated for the more complete tillage of 100." Although "relatively to the amount of capital and labour employed, space is concentrated, it is an enlarged sphere of production, as compared to the sphere of production formerly occupied or worked upon by one single independent agent of production." (R. Jones: "An Essay on the Distribution of Wealth," part I. On Rent. London, 1831. p. 191.)

[13] "La forza di ciascuno uomo è minima, ma la riunione delle minime forze forma una forza totale maggiore anche della somma delle forze medesime fino a che le forze per essere riunite possono diminuire il tempo ed accrescere lo spazio della loro azione." (G. R. Carli, Note to P. Verri, I. c., t. xv., p. 196.)

[14] "Profits ... is the sole end of trade." (J. Vanderlint, I. c., p. 11.)

[15] That Philistine paper, the *Spectator*, states that after the introduction of a sort of partnership between capitalist and workmen in the "Wirework Company of Manchester," "the first result was a sudden decrease in waste, the men not seeing why they should waste their own property any more than any other master's, and waste is, perhaps, next to bad debts, the greatest source of manufacturing loss." The same paper finds that the main defect in the Rochdale co-operative experiments is this: "They showed that associations of workmen could manage shops, mills, and almost all forms of industry with success, and they immediately improved the condition of the men; but then they did not leave a clear place for masters." Quelle horreur!

[16] Professor Cairnes, after stating that the superintendence of labour is a leading feature of production by slaves in the Southern States of North America, continues: "The peasant proprietor (of the North), appropriating the whole produce of his toil, needs no other stimulus to exertion. Superintendence is here completely dispensed with." (Cairnes, I. c., pp. 48, 49.)

[17] Sir James Steuart, a writer altogether remarkable for his quick eye for the characteristic social distinctions between different modes of production, says: "Why do large undertakings in the manufacturing way ruin private industry, but by coming nearer to the simplicity of slaves?" ("Prin. of Pol. Econ.," London, 1767, v. I., pp. 167, 168.)

[18] Auguste Comte and his school might therefore have shown that feudal lords are an eternal necessity in the same way that they have done in the case of the lords of capital.

[19] R. Jones. "Textbook of Lectures," &c., pp. 77, 78. The ancient Assyrian, Egyptian, and other collections in London, and in other European capitals, make us eye-witnesses of the modes of carrying on that co-operative labour.

[20] Linguet is improbably right, when in his "Théorie des Lois Civiles," he declares hunting to be the first form of co-operation, and man-hunting (war) one of the earliest forms of hunting.

[21] Peasant agriculture on a small scale, and the carrying on of independent handicrafts, which together form the basis of the feudal mode of production, and after the dissolution of that system, continue side by side with the capitalist mode, also form the economic foundation of the classical communities at their best, after the primitive form of ownership of land in common had disappeared, and before slavery had seized on production in earnest.

[22] "Whether the united skill, industry, and emulation of many together on the same work be not the way to advance it? And whether it had been otherwise possible for England, to have carried on her Woollen Manufacture to so great a perfection?" (Berkeley. "The Querist." London, 1751, p. 56, par. 521.)

*Transcribed by Hinrich Kuhls*

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**Course: Marx's Capital, Volume 1**

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